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AUTHOR Felsenthal, Helen; Kirsch, Irwin
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ABSTRACT

To determine if there was variability in scheduled and engaged time in reading among classrooms and in management style among teachers and to see if these factors accounted for differences on a standardized reading achievement measure, a study was conducted involving 13 fourth, fifth, and sixth grade reading classrooms. Pretest and posttest data were collected using a reading achievement test to measure cognitive outcomes. A structured observational record was used to document program implementation; items from this record were combined to comprise a measure of teacher management style. Information on the scheduled reading time was obtained from school administrators, and engaged reading time was obtained through observation. The study showed extreme variation in teacher management style and in the amount of engaged and scheduled time in reading in each classroom. However, an analysis of the results indicated that after accounting for pretest scores, neither engaged time nor management style accounted for a significant percentage of the variability in reading posttest scores. Although the results were not statistically significant, these variables appear to be worthy of further study in an attempt to relate teacher behavior to student learning. (FL)

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Variations in Teachers' Management of and Time Spent on Reading Instruction: Effects on Student Learning

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HELEN FELSENTHAL
Research for Better Schools, Inc.

and

IRWIN KIRSCH
University of Delaware

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This study examines the relationship between selected teacher behaviors and student reading achievement. The implementation of an individualized intermediate-grade reading program designed to emphasize comprehension skills was studied in thirteen classrooms during the 1976-77 school year. Since the reading program was designed for individualized instruction, there was much opportunity for variability in teacher role. Observational data and a standardized cognitive measure were utilized to study the relationship between teacher behavior and student achievement.

Perspectives

Research on the relationship between teacher characteristics and student achievement has been conducted for more than fifty years. More than 10,000 studies have been conducted on the topic of teacher effectiveness (Good, Biddle, and Brophy, 1975). Some authors (Stephens, 1967) feel that the research has contributed little knowledge helpful to educators. However, most reviewers feel the problem is in the design of the studies, and that well-designed studies are yielding significant information. Rosenshine (1976) states:

> It is difficult to assess the product or promise of the research to date. Different reviewers, looking at the same studies, have assessed some results as "holding up" over a variety of contexts and as inherently trivial. But all reviewers agree that the methodology and conceptual base of most of the studies to date has been inadequate. Studies currently under way appear to offer some improvement, and we eagerly await their results and the comparison of results across studies. (p. 338)

In the past, most of the teaching effectiveness research focused primarily on teacher variables such as use and type of reinforcement, clarity of directions, enthusiasm, etc. (Rosenshine and Furst, 1973). Although teacher-pupil interactions were studied, the major interest was on the teacher aspect of the interactions, e.g., Flanders Interactional Analysis. More recent research is moving toward "learning effectiveness" where both teacher and student variables are being studied on more specific aspects of learning and teaching.

Some of the student variables now under study are the amount and type of content covered, the amount of time engaged in instructional activities, student attention, and types of instructional engagements, e.g., seatwork, discussions, and peer instruction. Many of the teacher variables currently being studied can be viewed as classroom management procedures and include specific behaviors such as the organization of instruction (large group, small group, individual), amount and type of content covered, amount of active teaching time, etc.

Although many classroom variables have been studied, there are some which appear to be particularly worthy of further investigation. Time (or opportunity to learn) and teacher classroom management skills were the two variables examined in this study. Wiley and Harnischfeger's (1974) study reported that the amount of schooling is highly relevant to achievement. Many other studies have examined the relationship of time and school achievement (Good, Biddle, and Brophy, 1975; Harris et al., 1968; Rosenshine, 1971; Stallings and Kaskowitz, 1974).

Rosenshine (1976) summarized the results of selected studies on the relationship between time and student achievement and concluded that there was "no consistent relationship between the total amount of time spent on instruction and student achievement" (p. 345).

Classroom management skills can be defined in many ways. Brophy and Evertson (1976) stated that almost all surveys of teacher effectiveness report that classroom management skills are of primary importance in determining teaching success. Poorly managed classes usually have less engaged time; thus students have less opportunity to learn. In well-managed classes less time is spent in disciplining and organizing (Brophy and Evertson, 1974; Good and Grouws, 1975). The following is a summary of the characteristics which Brophy and Evertson (1976) found in well-managed classrooms: high level of student engagement in lessons and activities, availability of teacher help without disrupting lessons in progress, a system for students to continue work when original assignment is completed, adequate teacher monitoring ("with-it-ness"), prevention of problems which cause a "rippling effect," awareness that teacher was in charge of the class, smoothness of transition periods, and well-established classroom rules. In this study, classroom management style included the following teacher behaviors: supervision of students' daily progress, level of task-oriented interaction with students, ability to keep students on task, use of positive reinforcement techniques, and supervision of quality of student work.

This study was part of a larger experiment to examine the implementation and effectiveness of an intermediate-grade level reading program titled Systematic Progress in Reading and Literature (SPIRAL), which is being designed and tested by Research for Better Schools. In the larger study, the program implementation variables included classroom physical arrangements, use of program components, student role, teacher management style, and time in program. Classroom observations indicated that there was a high degree of implementation and little variability among the classrooms in the categories of classroom physical arrangements, use of program components, and student role. However, much more variability was evidenced for the categories of teacher management style and time in the program. The variables in these categories were subject to further analysis and are reported here.

Purpose

The purpose of this investigation was to study the effects of teacher management style and scheduled and engaged time on students' reading achievement. Evaluation questions centered around processes and outcomes involving teacher variability.

The evaluation questions were as follows:

Process Questions

1) Is there variability among classrooms in scheduled and engaged time in reading?

2) Is there variability among teachers in management style?

Outcome Questions

1) Does scheduled and engaged time in reading account for differences on a standardized reading achievement measure?

2) Does teacher management style account for differences on a standardized reading achievement measure?

Methodology

The data source, instruments, and statistical design are described below.

Data Source

Subjects. Pre- and posttest data were collected from 475 fourth, fifth, and sixth graders in thirteen classes at four elementary schools. Students were selected for program participation based on teacher judgment and performance on standardized achievement tests. With few exceptions, a grade equivalency score between 4.0 and 8.9 on a standardized reading achievement test was the prerequisite for entrance into the reading program. Classes ranged in size from 25 to 35 students. There were five 4th grade classes, four 5th grade classes, and four 6th grade classes.

Three of the schools were located in a large metropolitan area. School one was represented by a mix of socioeconomic groups ranging from upper middle to lower class; about half of the students were black. The second school was located in a working class area with varied ethnic representation, primarily white. School three was located in a white lower middle to middle class suburb. The fourth school was located in an urban white working class area of a city of 50,000.

Instruments. Pretest data were collected using a published reading achievement test, the Reading Comprehension portion of the Iowa Test of Basic Skills (ITBS). This measure was administered by classroom teachers with supervision from evaluation staff at the beginning of the 1976-77 school year. In the posttest package, the program evaluators administered an alternate form of the Reading Comprehension section of the ITBS to measure cognitive outcomes.

In an effort to document program implementation, a structured observational record was developed by the evaluators in consultation with program developers (see Appendix). The observation record consisted of 40 items dealing with technical operations, student role, teacher management style, and time involved in reading. At the end of each observation period, the instrument was coded on a scale of 1 (low) to 5 (high) for each observational item.

In the spring of 1977, each classroom was observed a total of three times by two different raters for a total of 39 observations. An inter-observer agreement check was made on the first and last day of the observations by having the two observers independently code the observational record while observing the same class. Inter-rater reliability, using Ebel's intra-class formula (1951), yielded an observer agreement of .90 at the beginning and .91 at the end of the observation period.

Items from the Observation Record were combined to comprise a measure of teacher management style. These items focused on teachers' daily supervision of student progress, task oriented interaction with students, ability to keep students on task, use of positive reinforcement, and supervision of the quality of student work. Information on the

amount of reading time scheduled was obtained from school administrators. Engaged time in SPIRAL was obtained through observation. Estimates of engaged time was computed in minutes/week for each class.

Analysis

A stepwise multiple regression was used to examine the relationship between the process factors -- engaged time, management style, and scheduled time -- and the outcome measure, a reading comprehension test. Pretest scores (the comprehension subtest of the ITBS) were entered as the first step in the multiple regression. Standard scores from the posttest were used as the dependent variable.

Limitations of Study

The study reported in this paper was part of a larger evaluation effort in which the major purpose was to test the implementation of a newly-designed reading curriculum and to compare the effectiveness with another reading program. The original evaluation plan was primarily an experimental pre-to-post design where two kinds of reading programs are compared in terms of reading achievement. Extensive classroom observations were not planned and the control classes were not observed. Rather, there was a limited number of observations (3 per class), primarily to ascertain that the program was being implemented as designed. The study reported in this paper was done post hoc after it was discovered that the greatest variability in implementation was in the areas of teacher management, scheduled time, and engaged time.

The unit of analysis was the classroom, and since only 13 classrooms were studied, the n was small. More extensive observations, using the

student as the unit of analysis, may have provided more useful information. The study of within program variables appears to be more fruitful than the traditional between program studies (Good, Biddle, and Brophy, 1975). In retrospect, the researchers should have concentrated on more intensive classroom observations, which might have answered some of the questions concerning effective teaching.

Results

Observers recorded considerable variability in management style of teachers with overall management mean scores ranging from 1.66 to 4.93 on a scale from 1 to 5 (see Table 1).

Table 1

Item Score Means* Teacher Role

ITEMS \ CLASSES	School 1				School 2			School 3			School 4			Overall	
	A	B	C	D	A	B	C	A	B	C	A	B	C	$\bar{X}$	s
Teacher supervises students' daily progress through review of pupil planning booklets.	2.00	2.00	3.00	1.67	5.67	4.00	3.33	2.00	5.00	3.66	4.00	4.67	3.67	3.33	1.26
Teacher maintains high level of teacher-directed interaction with students.	4.00	3.50	3.00	2.00	5.00	4.00	4.00	2.00	4.67	2.33	3.50	4.67	4.33	3.69	1.14
Teacher keeps students on task.	3.50	3.33	3.00	2.00	4.33	4.00	4.67	3.33	5.00	3.67	4.50	4.67	4.33	3.79	1.11
Teacher uses positive reinforcement techniques.	3.00	2.00	3.33	1.33	4.67	3.00	3.67	3.67	5.00	3.67	3.50	4.67	3.33	3.39	1.17
Teacher supervises conduct of student work.	3.50	3.50	3.67	2.33	4.67	3.67	4.33	3.67	5.00	3.67	3.50	4.33	4.00	3.78	1.21
Overall	$\bar{X}$	3.50	2.90	3.00	1.66	4.93	3.73	3.93	3.73	4.93	3.49	3.92	4.67	3.93	
Overall	s	.71	.63	.72	.33	.39	.71	.64	.84	.13	.87	.38	.25	.63	

*Scores range from 1 = Low to 5 = High.

In some classes, teachers were able to maintain a steady flow of student work throughout the reading period; in other classes, work seemed to go in spurts, as teachers had no clear routine established with the pupils. In two classes, very little on-task work occurred at all. The teachers with clearly established routines were more successful in checking students' daily progress and in supervising the quality of student work. In one particular chaotic, off-task class, the teacher neverth-less maintained a warm supportive relationship with the students, although requiring little of them in the way of SPIRAL work. In another somewhat less chaotic off-task class, the teacher maintained a strong adversarial role with the students, replete with threats and raised voice.

Considerable variability was also noted in the amount of engaged time in reading in each of the thirteen classes. Differences were found for both scheduled and engaged time (see Table 2 and Figure 1).

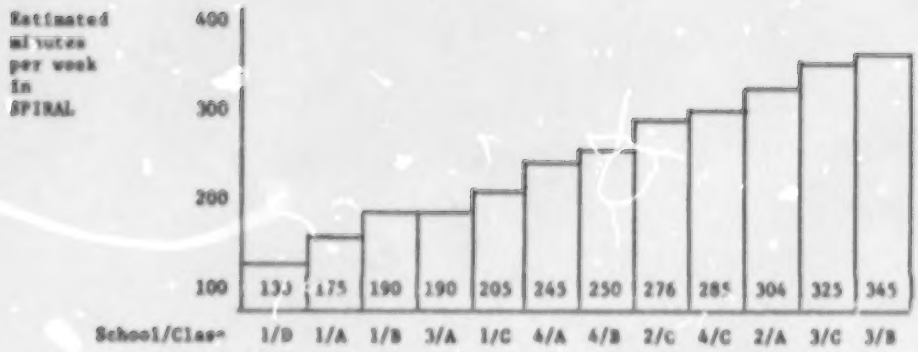
Table 2
Time to Progress

ITEMS \ CLASSES	School 1				School 2			School 3			School 4		
	A	B	C	D	A	B	C	A	B	C	A	B	C
a. Frequency SPIRAL scheduled (days per week)	5	5	5	5	4	4	4	5	5	5	5	5	5
b. Length of scheduled SPIRAL period (in minutes)	45	45	45	45	90	90	90	60	70	70	60	60	60
c. Mean length of engaged time (in minutes)	35	38	41	26	76	*	69	38	69	65	69	50	57
d. Estimated engaged minutes per week in SPIRAL (a) x (c)	175	225	205	130	304	—	276	190	345	325	345	250	285
e. Ratio (engaged time to scheduled time)	.77	.84	.91	.57	.84	—	.77	.64	.99	.93	.83	.83	.96

* unable to obtain

Figure 1

Estimated Minutes per Week in SPIRAL



At one school, SPIRAL was scheduled for 45 minutes per day (225 minutes per week), at another 60 minutes per day (300 minutes per week), at the third 60 to 70 minutes per day (300 to 350 minutes per week), and at the fourth 90 minutes per day, four days a week (360 minutes per week).

In terms of actual time observed in SPIRAL (engaged time), individual classrooms ranged from a mean of 26 minutes per day to 76 minutes per day and from 130 minutes per week to 345 minutes per week. Ratios of engaged time to scheduled time ranged from .57 to .99, with only four of the thirteen classes having ratios greater than .90.

Using stepwise regression, variability in the cognitive measure was assessed by entering pretest scores, engaged time, management style, scheduled time, and ratio of engaged time to scheduled time on steps 1 through 5, respectively. The multiple correlations at each step are reported in Table 3. Results indicated that the pretest scores accounted for 73% of the variability in the reading posttest scores. Engaged time and management style accounted for an additional 7% and 3% of the variability respectively. Using a test for the increment in R Square, the F rations were not significant at the .05 level. The lack of power due to a small sample size (13 classes) could have been one reason for the lack of significance.

Table 3

Multiple Regression Summary

Variables	Multiple R	R Square	RSQ Change	Simple R
ITBS PR[1]	0.85294	0.72751	0.72751	0.85294
ENG TM[2]	0.89114	0.79412	0.06662	0.53145
MAN TOT[3]	0.90513	0.82035	0.02623	0.27151
SCHD TM[4]	0.90698	0.82262	0.00227	0.35872
Ratio[5]	0.90876	0.82584	0.00322	0.21169

[1]Iowa test of Basic Skills Pretest

[2]Engaged time

[3]Management variables totalled

[4]Scheduled time

[5]Ratio of engaged time to scheduled time

There appear to be substantial differences among classrooms in the opportunities afforded students to participate in and experience reading activities. Although the results were not significant, it is believed that these differences in management style and time result in outcome differences in cognitive measures.

Summary and Implications

Much has been learned from the study of these thirteen reading classes during the past school year. The reading materials were designed so that there would be a match between student ability and instructional materials. All teachers were given identical training in terms of how to use the materials. Observational data indicated that the technical operations of the program and the student role were implemented as specified.

However, two areas showed extreme variation in implementation. The teacher's management skills (or style) and the amount of time spent on reading differed greatly among the classes. The results of the data analysis indicated that, although not statistically significant, this variance may have affected reading achievement.

The study raises many questions: Why is there such a great range in scheduled time spent on reading instruction? Who makes decisions or use of school time,and on what basis? What is the relationship between scheduled time in reading instruction and actual time spent? What accounts for the differences between scheduled time and engaged time? Why do teacher management styles differ? What are the critical

variables which constitute effective "management style"? How can teachers learn to improve management style?

Brophy and Evertson (1976) believe that isolated and specific teaching skills do not make for effective teaching, but rather that the "orchestration" (the treating of individual students according to situational demands) of these skills makes the differences. Further study of management style might contribute to a better understanding of the many interacting variables which relate to teaching effectiveness.

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APPENDIX

SPIRAL Observational Record

Name of Teacher _____ School _____

Grade _____ Date _____ Observer _____

Directions: This observational record is intended to assess the extent to which the field site is implementing the SPIRAL program as intended by the program developers. Answer every item. Circle "NA" if that observation is not applicable or not observable; however, "NA" should be avoided if possible. Interview teachers and students to avoid marking "NA."

PART I. TECHNICAL OPERATIONS

	Definitely No				Definitely Yes	
A. Physical Arrangements/Materials						
1. SPIRAL materials are present in classroom ("All Anthology" box, box for each reading level, anthologies, etc.).	1	2	3	4	5	NA
2. SPIRAL materials are accessible to students during reading period.	1	2	3	4	5	NA
3. Wall charts are placed where students can write on them.	1	2	3	4	5	NA
4. Supplies for SPIRAL activities (e.g., poster board, paste, scissors, magic markers, etc.) are easily accessible to students.	1	2	3	4	5	NA
5. Space is provided for students to work in small groups (e.g., Activity Cards).	1	2	3	4	5	NA
6. Space is provided where students can display results of activities to share with class.	1	2	3	4	5	NA
7. Each student has folder for planning booklets, answer sheets and other theme-related material.	1	2	3	4	5	NA
B. Placement Procedures						
8. Students are placed in SPIRAL according to criteria established in Teacher's Guide.	1	2	3	4	5	NA

PART I (continued)

C. Program Components (from last previously completed section of pupil planning booklet and/or discussion with students)

There is evidence that the following program components are in operation:	Definitely No				Definitely Yes	
9. Discussions related to anthology selections	1	2	3	4	5	NA
10. Reading Strategy Lessons (fiction, nonfiction, and poetry)	1	2	3	4	6	NA
11. Focus Finders	1	2	3	4	5	NA
12. Focus Finder Games	1	2	3	4	5	NA
13. Anthology-Related Activities	1	2	3	4	5	NA
14. Study Skills	1	2	3	4	5	NA
15. Skill Lessons	1	2	3	4	5	NA
16. Skill Modules	1	2	3	4	5	NA
17. Skill-Related Activities	1	2	3	4	5	NA
18. Skill Checks	1	2	3	4	5	NA
19. Theme-Related Activities	1	2	3	4	5	NA
20. Conferences	1	2	3	4	5	NA
21. Independent Reading	1	2	3	4	5	NA

PART II. STUDENT ROLE

22. Students select own activities	1	2	3	4	5	NA
23. Students determine length of time spent on activities	1	2	3	4	5	NA
24. Students self-score Focus Finders, Skill Modules, Study Skills (first two parts)	1	2	3	4	5	NA
25. Students keep own records in planning booklet	1	2	3	4	5	NA
26. Students work independently on designated tasks (Skill Modules, Skill Checks, Focus Finders, etc.)	1	2	3	4	5	NA

PART II (continued)

	Definitely No				Definitely Yes	
27. Students interact with peers within SPIRAL-related activities (e.g., Activity card, Focus Finder, peer tutoring, etc.)	1	2	3	4	5	NA
28. Students work horizontally across Pupil Planning Booklet	1	2	3	4	5	NA
29. Students are aware of own progress in SPIRAL (i.e., sequence of activities)	1	2	3	4	5	NA

PART III. TEACHER ROLE

30. Teacher expands on ideas and themes introduced in SPIRAL through class projects (art projects, guest speakers, trips, etc.)	1	2	3	4	5	NA
31. Teacher supervises students' daily progress through review of pupil planning booklets	1	2	3	4	5	NA

PART IV. GENERAL

Describe teacher's management style:

32. Low level of task oriented interaction with students	1	2	3	4	5	High level of task oriented interaction with students NA
33. Doesn't keep students on task	1	2	3	4	5	Keep students on task NA
34. Doesn't use reinforcement techniques	1	2	3	4	5	Uses reinforcement techniques NA
35. Doesn't supervise quality of student work	1	2	3	4	5	Supervises quality of student work NA

PART IV (continued)

36. SPIRAL is used as ☐ only regular reading program.
☐ supplementary program.

37. How often is SPIRAL scheduled? _____

38. Length of SPIRAL period scheduled _____

39. Length of SPIRAL period observed _____

40. Explain all items marked NA (Not Applicable).

Item No.	Comment

41. Explain all items marked below midpoint.

Item No.	Comment

42. Briefly describe in one paragraph class activities, atmosphere, organization, etc.